

US EPA RECORDS CENTER REGION 5



507965

# **NT- NEYER, TISEO & HINDO, Ltd.**



30999 Ten Mile Road • Farmington Hills, Michigan 48024  
(313) 471-0750

## REPORT ON SOIL INVESTIGATION

PROJECT NO.: 56924

DESIGNATION: Proposed Dealership Facilities  
Ten Mile & Haggerty Roads

LOCATION: Farmington Hills, Michigan

OWNER: Ford Motor Company

DATE: January 23, 1984



CONSULTING  
ENGINEERS

# NEYER, TISEO & HINDO, Ltd.

30999 Ten Mile Road • Farmington Hills, Michigan 48024 • (313) 471-0750

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January 23, 1984  
Project No. 56924

Mr. Donald Kilpela  
Dealership Real Estate Office  
Ford Motor Company  
300 Renaissance Center  
Detroit, Michigan 48243

RE: Proposed Dealership Facilities  
10 Mile and Haggerty Roads  
Farmington Hills, Michigan

Dear Mr. Kilpela:

This letter report presents additional data and recommendations regarding the development of the property at 10 Mile and Haggerty Road in Farmington Hills, Michigan. The purpose of this report is to further define the subsoil conditions on the site and to make recommendations concerning the foundation and site development requirements. The data and conclusions presented are believed to be adequate for final design. However, supplementary data may be required dependent on the final design concepts.

As presented in our preliminary report dated June 21, 1983, the site was originally used as a borrow pit for sand and gravel in the 1950's. During the 1960's, the pit was backfilled with domestic refuse. Test borings made in 1976 and test pits made on June 15, 1983 revealed a 33 foot maximum depth of garbage fill. The test pits also revealed that the fill was domestic refuse. At one-half of the test pits, the depth of the garbage fill exceeded the capacity of the backhoe.

In order to further evaluate the extent of the existing garbage fill and native soils, a total of 28 test borings, designated as Testing Boring Nos. 1, 2, 4, and 6 through 30, were drilled on the site at the locations shown on the Test Boring Location Plan, Plate 1. Test Boring Nos. 3 and 5 were not drilled during the field investigation due to inaccessible site conditions. The test borings were located by our field personnel utilizing staking from the survey by JCK and Associates. Ground surface elevations at the test boring locations were interpolated from the survey data.

Mr. Donald Kilpela  
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During the period from November 29 to December 5, 1983, the test borings were drilled by Corbin Drilling Company under the full-time supervision of our field engineer. The test borings were drilled to depths ranging from 5 to 40 feet below the ground surface. The boring was advanced by a truck-mounted rotary drilling rig utilizing a 4-inch diameter solid-stem auger and 6-inch diameter hollow-stem augers. Within each boring, no regular sampling was performed on the upper surface soils and rubbish fill except for visual examination of the material brought to the surface by the augers. When visual examination indicated that undisturbed native soils had been encountered, a soil sample was obtained by the Standard Penetration Test Method (ASTM D-1586) to determine the Standard Penetration Resistance (N). The boring was terminated if the soil sample was of undisturbed native soil, or continued until the rubbish fill was completely penetrated.

Soil conditions encountered in the test borings have been evaluated and are presented in the form of Logs of Test Boring, Figures 1 to 28. In addition, the logs present information relating to sample data, Standard Penetration Resistance, water conditions observed, personnel involved and other data. For information and to aid in understanding the data presented on the logs, General Notes defining nomenclature used in soil descriptions and the Standard Penetration Test method are presented on Plate 2. The logs included with this letter have been prepared on the basis of laboratory classification and testing as well as field logs of the soils encountered.

The laboratory testing for this project consisted of the determination of the natural moisture content, in-place dry density, unconfined compressive strength, and grain-size determination of selected samples. The results of all laboratory tests are presented on the Tabulation of Test Data sheets, Figures 29 to 31.

On the basis of the information developed during the course of this investigation, it was possible to further define the extent of the rubbish fill. The lateral extent and approximate bottom elevations of the rubbish fill are presented on Plate 3, Bottom of Rubbish Fill. This same data is presented in a somewhat different format on Plate 4, Rubbish Fill Thickness. As shown on Plates 3 and 4, the lowest and thickest areas of rubbish fill are located at the northeast and southwest corners of the site and within the buried valley connecting these points.



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The subsoils underlying the rubbish fill or outside the rubbish fill generally consist of stiff to very stiff silty clays or medium compact to compact sands, with varying amounts of silt and gravel. At most locations, the rubbish fill is covered with a relatively thin layer of soil consisting of medium sandy or silty clays with varying amounts of organic material and debris.

Groundwater level observations were made at each of the test boring locations during and following completion of the exploration operation. Groundwater was encountered in approximately half of the test borings at depths of 7 to 36 feet. At completion, the groundwater was observed at depths of 11 to 35 feet. This corresponds to Elevations 846 to 867.

It is our understanding that the present plans call for the construction of two dealership facilities at the locations shown on Plate 1. It is understood that the structural loads will be light. At this time, the finished floor grades have not been established. However, it is anticipated that the finish floor will be similar to the existing road grades which will require lowering the existing site grade. The site will be paved with a bituminous pavement which will support auto and truck traffic.

Based on visual observations, the topsoil outside the rubbish fill area is moderately organic. Therefore the topsoil is not considered suitable for the support of building foundations or floor slabs, direct support of pavements or fill within the building area. However, the topsoil may be used for fill provided that all surface vegetation is removed and the topsoil is mixed with other fill. The native subsoils are considered suitable for the direct support of moderate loads and for use as compacted fill.

The rubbish fill is not considered suitable for support of building foundations or floor slabs. However, some of the rubbish fill may be left in place below paved areas provided that the criteria outlined later are followed.

The soils which are presently in place above the rubbish fill are considered suitable for the support of pavements provided that the criteria outlined later are followed. Those soils which are free of organic material, debris and rubbish may be used as compacted fill within the building area. Those soils which contain trace amounts of organic material and non-decomposable rubble may be re-used as fill over the rubbish in future paved areas.





Development of this site will require special construction methods to deal with the existing garbage fill. Consideration has been given to complete removal of all garbage from the site and replacement with compacted fill. The cost of this procedure is believed to be prohibitive for the type of development contemplated. Consideration has also been given to the support of the proposed structures on piles driven through the garbage and into the firm underlying soils. Because of the organic nature of the garbage fill, it would be necessary to install a methane collection and control system below the proposed building. The cost of this system, and the potential for problems with the methane collection system, make this procedure undesirable.

It is recommended that the proposed buildings be supported on compacted fill placed after removal of all existing garbage fill from within the limits of the proposed buildings and a strip 20 feet wide outside of the buildings. If this procedure is used, there would be no need for a methane collection system and special building foundations (e.g., piles) would not be required. The cost of this operation would be considerably less than the cost of the total removal of garbage fill. If site grades are to be lowered to near the level of the adjacent roads, the available cut material should be approximately equal to the fill required.

Site work operations should commence with removal of surface topsoil and vegetation. The natural soils covering the garbage fill may be stripped and stockpiled for future use or they may be wasted with the garbage fill, depending upon the excavation method selected by the contractor. Throughout the entire site to be developed, the existing garbage fill should be removed to a level of four feet below proposed top of pavement.

The garbage fill should be removed in its entirety from the area of the proposed buildings and for a distance of 20 feet outside of the proposed building lines in all directions. This will require excavations as deep as 35 feet below presently existing grade.

The excavations made for the proposed buildings should be back-filled with engineered fill to finished grade. The native soils on the site may be used as material for the engineered fill. Most of the available cut soils are to be found on the westerly edge of the site and consist of silty clay materials. In order to achieve proper compaction of these materials, it will be necessary to control the moisture content during placement and compaction.



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Fill should be placed in horizontal lifts with each lift being properly compacted prior to placement of subsequent lifts. All fill within the limits of the building excavations should be compacted to not less than 95 percent of the maximum dry density as determined by ASTM D-1557 (Modified Proctor Compaction Test).

Within the proposed parking areas, engineered fill should be placed above the garbage fill remaining after stripping to 4 feet below finished grade. On-site native soils may also be used for this fill. Compaction of fill in the parking areas should also be to not less than 95 of the maximum dry density as determined by ASTM D-1557.

All garbage fill removed during the above-mentioned operations should be removed from the site and disposed of at an approved landfill. In addition, any groundwater contaminated by contact with the garbage fill should be pumped to a sanitary sewer rather than into the storm water system. During site work operations, it will also be necessary to control noxious odors generated by the decomposing garbage. This can be accomplished by working relatively small areas at any one time, by covering exposed garbage surfaces with visqueen, or by other methods selected by the contractor.

It is recommended that consideration be given to accomplishing the site preparation work under a separate contract, rather than including this work in the building contract. The site preparation contractor should be made responsible for obtaining all state and local permits, for controlling odors and water discharge during construction, and for selection of construction procedures appropriate to the project.

Installation of water and sewer lines may be part of the site work package or the building package. Where these utilities encounter the existing garbage fill, the garbage should be removed for a minimum depth of one foot below the proposed utility and this space filled with crushed stone or crushed concrete bedding.

After the above outlined earthwork operations are performed in the building area, it is recommended that the proposed building be supported on shallow spread and/or strip footings bearing on undisturbed native soils or on compacted fill. Exterior footings should be founded a minimum of 3.5 feet below exterior finished grade for protection against frost penetration. Interior footings not subject to frost penetration may be founded at shallower depths.



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An allowable net bearing pressure of 3,000 pounds per square foot is recommended for the design of footings. However, strip footings should not be less than 12 inches in width and isolated footings should have a least dimension of 18 inches, regardless of the resultant bearing pressure.

If the recommendations outlined in this report are adhered to, total and differential settlements for the completed structure should be within tolerable limits for the type of building proposed. It is recommended that all strip footings be suitably reinforced to minimize the effects of small differential settlements associated with local variations in subsoil conditions.

As previously mentioned, the groundwater level was observed between Elevations 846 and 867. It is expected that excavations for rubbish fill removal will extend below the observed water levels. It is expected that a considerable quantity of water will be encountered. However, it is anticipated that the water can be handled by pumping from properly constructed sumps during the excavation and backfilling for the building support fill. The water pumped from these excavations should be disposed of in a sanitary sewer rather than pumped into the storm drainage system.

If the earthwork operations are performed as recommended in this report, the on-site soils should be suitable for the support of floor slabs and pavements. In those areas where garbage fill is allowed to remain below the pavement, it is recommended that a system of gas vents be installed to prevent the buildup of methane below the pavement. The system should include vent pipes driven into the garbage fill and extending at least 8 feet above the surface of the parking lot.

No resistivity tests were performed to determine the corrosion potential of the on-site soils. It is recommended that the corrosion potential of the soils be determined after the recommended earthwork is completed and the fill below the proposed structures is in place.

The purchase of an abandoned landfill may carry certain legal liabilities with regard to subsurface conditions. If, at some future date, the landfill is deemed to be the source of groundwater pollution or some other hazard, the owner of the property at that time may be required to undertake cleanup operations. It is therefore recommended that the potential liability of Ford Motor Company be evaluated by legal counsel prior to finalization of the purchase.



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The evaluations and recommendations presented in this letter have been formulated on the basis of reported or assumed data relating to the location, type and finished grades for the proposed facilities. Any significant change in this data in the final design plans should be brought to our attention for review and evaluations with respect to the prevailing subsoil conditions.

It is considered essential that a qualified geotechnical engineer be retained to provide soil engineering services during the site preparation and earthwork phases of the proposed project. This is to observe compliance with the design concepts, specifications and recommendations. Also, this allows design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction.

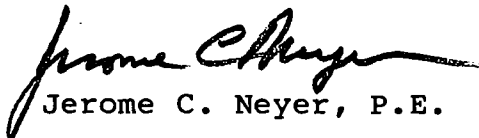
If you have any questions concerning this letter or the enclosed data, please do not hesitate to contact us. We appreciate this opportunity to have been of service to you.

Very truly yours,

NEYER, TISEO & HINDO, LTD.



J. Michael Smalley, P.E.



Jerome C. Neyer, P.E.

JMS/JCN/jf  
Enclosures



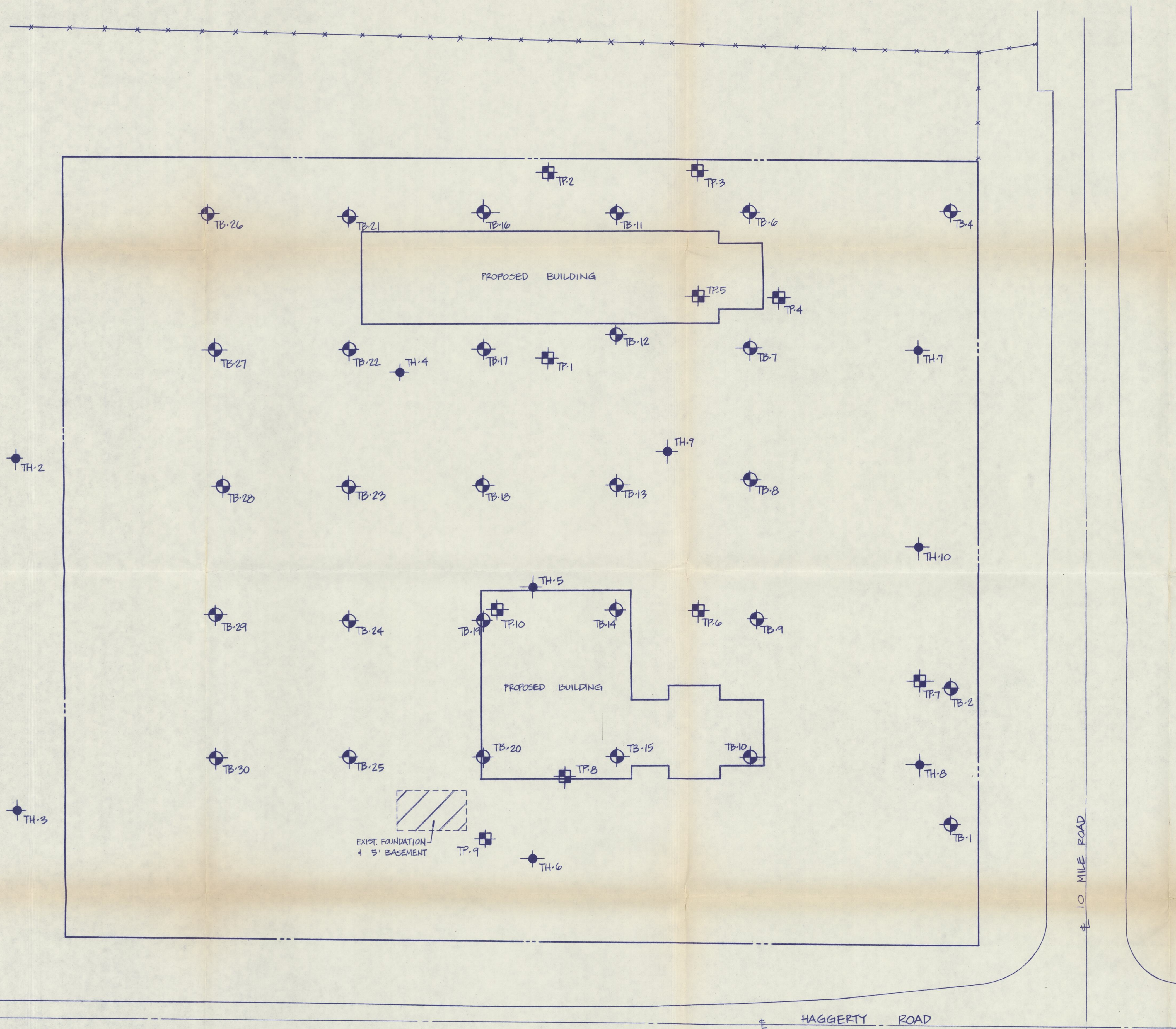
NEYER, TISEO & HINDO, Ltd.

APPENDIX A

|  |               |
|--|---------------|
| TEST BORING LOCATION PLAN. . . . .           | PLATE 1       |
| GENERAL NOTES . . . . .                      | PLATE 2       |
| BOTTOM OF FILL CONTOURS . . . . .            | PLATE 3       |
| THICKNESS OF FILL CONTOURS . . . . .         | PLATE 4       |
| LOG OF TEST BORING NOS. 1,2,4,6-30 . . . . . | Figures 1-28  |
| TABULATION OF TEST DATA . . . . .            | Figures 29-31 |



INTERSTATE 275



**LEGEND:**

- TEST BORINGS BY CORBIN DRILLING CO. FROM NOVEMBER 29 TO DECEMBER 5, 1983 UNDER THE SUPERVISION OF NEYER, TISEO & HINDO, LTD. (TB-3 & TB-5 WERE NOT DRILLED)
- TEST PITS EXCAVATED BY PI-CON, INC. ON JUNE 15, 1983 UNDER THE SUPERVISION OF NEYER, TISEO & HINDO, LTD.
- PREVIOUS TEST BORINGS BY MICHIGAN TESTING ENGINEERS, INC. FROM SEPTEMBER 8 TO SEPTEMBER 10, 1976.

**TEST BORING LOCATION PLAN**

PROPOSED DEALERSHIP FACILITIES  
TEN MILE AND HAGGERTY ROAD  
FARMINGTON HILLS, MICHIGAN

**NH** NEYER, TISEO & HINDO, LTD.  
CONSULTING ENGINEERS  
30999 TEN MILE RD., FARMINGTON HILLS, MI 48024

|                    |                 |               |
|--------------------|-----------------|---------------|
| PROJECT NO.: 56924 | DRAWN BY: MFG   | DATE: 1.24.84 |
| SCALE: AS SHOWN    | CHECKED BY: JCN | SHEET 1 OF 1  |



# NEYER, TISEO & HINDO, LTD.

## GENERAL NOTES

### TERMINOLOGY

Unless otherwise noted, all terms utilized herein refer to the Standard Definitions presented in ASTM D 653.

### PARTICLE SIZES

|                 |   |  |
|-----------------|---|--|
| Boulders        | - | Greater than 12 inches (305mm)                       |
| Cobbles         | - | 3 inches (76.2mm) to 12 inches (305mm)               |
| Gravel - Course | - | 3/4 inches (19.05mm) to 3 inches (76.2mm)            |
| Gravel - Fine   | - | No. 4 - 3/16 inches (4.75mm) to 3/4 inches (19.05mm) |
| Sand - Course   | - | No. 10 (2.00mm) to No. 4 (4.75mm)                    |
| Sand - Medium   | - | No. 40 (0.425mm) to No. 10 (2.00mm)                  |
| Sand - Fine     | - | No. 200 (0.074mm) to No. 40 (0.425mm)                |
| Silt            | - | 0.005mm to 0.074mm                                   |
| Clay            | - | Less than 0.005mm                                    |

### COHESIONLESS SOILS

| Classification   | Density Classification                 | Relative Density %   | Approximate Range of (N) |
|--|--|--|--------------------------|
| The major soil constituent is the principal noun, i.e. sand, silt, gravel. The second major soil constituent and other minor constituents are reported as follows: | Very Loose                             | 0-15   | 0-4                      |
|  | Loose                                  | 16-35  | 5-10                     |
|  | Medium Compact                         | 36-65  | 11-30                    |
|  | Compact                                | 66-85  | 31-50                    |
|  | Very Compact                           | 86-100   | Over 50                  |
| Second Major Constituent (percent by weight)   | Minor Constituents (percent by weight) | Relative Density of Cohesionless Soils is based upon the evaluation of the Standard Penetration Resistance (N), modified as required for depth effects, sampling effects, etc. |                          |
| Trace - 1 to 12%   | Trace - 1 to 12%                       |  |                          |
| Adjective - 12 to 35% (clayey, silty, etc.)  | Little - 12 to 23%                     |  |                          |
| And - Over 35%   | Some - 23 to 33%                       |  |                          |

### COHESIVE SOILS

If clay content is sufficient so that clay dominates soil properties, clay becomes the principal noun with the other major soil constituent as modifier, i.e., silty clay. Other minor soil constituents may be included in accordance with the classification breakdown for cohesionless soils; i.e., silty clay, trace of sand, little gravel.

| Consistency | Unconfined Compressive Strength (psf) | Approximate Range of (N) |
|-------------|---------------------------------------|--------------------------|
| Very Soft   | Below 500                             | 0-2                      |
| Soft        | 500-1000                              | 3-4                      |
| Medium      | 1000-2000                             | 5-8                      |
| Stiff       | 2000-4000                             | 9-15                     |
| Very Stiff  | 4000-8000                             | 16-30                    |
| Hard        | 8000-16000                            | 31-50                    |
| Very Hard   | Over 16000                            | Over 50                  |

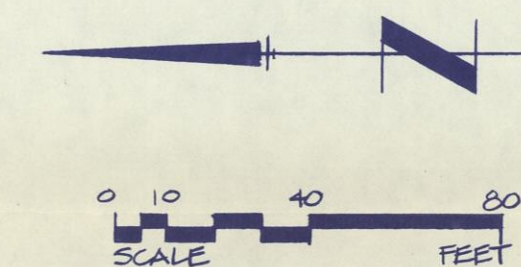
Consistency of cohesive soils is based upon an evaluation of the observed resistance to deformation under load and not upon the Standard Penetration Resistance (N).

### SAMPLE DESIGNATIONS

- AS - Auger Sample - Directly from auger flight.
- BS - Miscellaneous Samples - Bottle or Bag.
- S - Split Spoon Sample with Liner Insert - ASTM D 1586
- LS - Liner Sample S with liner insert 3 inches in length.
- ST - Shelby Tube Sample - 3 inch diameter unless otherwise noted.
- PS - Piston Sample - 3 inch diameter unless otherwise noted.
- RC - Rock Core - NX-core unless otherwise noted.

**STANDARD PENETRATION TEST (ASTM D 1586)** - A 2.0" outside-diameter, 1-3/8" inside-diameter split barrel sampler is driven into undisturbed soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The sampler is normally driven three successive 6-inch increments. The total number of blows required for the final 12 inches of penetration is the Standard Penetration Resistance (N).





TEST BORINGS BY CORBIN DRILLING CO. FROM NOVEMBER 29  
TO DECEMBER 5, 1983 UNDER THE SUPERVISION OF  
NEYER, TISEO & HINDO, LTD. (TB-3 & TB-5 WERE NOT DRILLED)

TEST PITS EXCAVATED BY PI-CON, INC. ON JUNE 15, 1983  
UNDER THE SUPERVISION OF NEYER, TISEO & HINDO, LTD.

PREVIOUS TEST BORINGS BY MICHIGAN TESTING ENGINEERS, INC.  
FROM SEPTEMBER 8 TO SEPTEMBER 10, 1976.

850 CONTOURS INDICATE BOTTOM OF RUBBISH FILL ELEVATION.  
CONTOUR INTERVAL 5 FEET.

APPROXIMATE EXTENT OF RUBBISH FILL.

THE RUBBISH FILL BOTTOM CONTOURS SHOWN HAVE BEEN INTERPOLATED BASED ON AVAILABLE SUBSURFACE DATA. FOR INFORMATION AT SPECIFIC LOCATIONS SEE THE INDIVIDUAL LOGS OF TEST BORING OR TEST PIT.

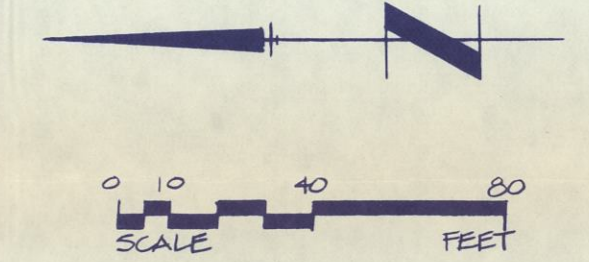
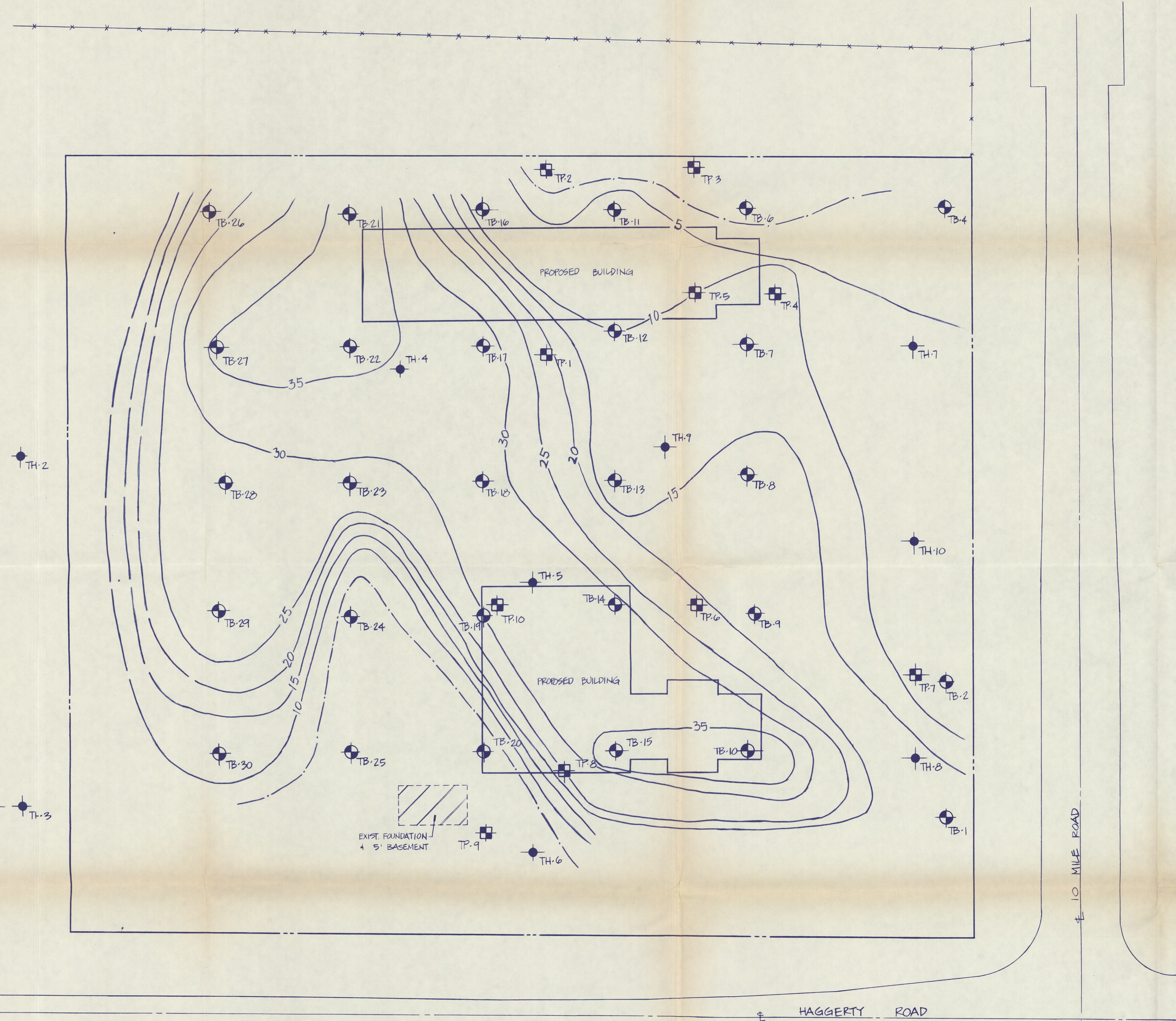
BOTTOM OF RUBBISH FILL

PROPOSED DEALERSHIP FACILITIES  
TEN MILE AND HAGGERTY ROAD  
FARMINGTON HILLS, MICHIGAN

 **NEYER, TISEO & HINDO, LTD.**  
**CONSULTING ENGINEERS**  
30999 TEN MILE RD., FARMINGTON HILLS, MI 48024

|                    |                 |               |
|--------------------|-----------------|---------------|
| PROJECT NO.: 56924 | DRAWN BY: MFE   | DATE: 1.24.84 |
| SCALE: AS SHOWN    | CHECKED BY: JCN | SHEET 1 OF 1  |





**LEGEND:**

- TB TEST BORINGS BY CORBIN DRILLING CO. FROM NOVEMBER 29 TO DECEMBER 5, 1983 UNDER THE SUPERVISION OF NEYER, TISEO & HINDO, LTD. (TB-3 & TB-5 WERE NOT DRILLED)
- TP TEST PITS EXCAVATED BY PI-CON, INC. ON JUNE 15, 1983 UNDER THE SUPERVISION OF NEYER, TISEO & HINDO, LTD.
- TH PREVIOUS TEST BORINGS BY MICHIGAN TESTING ENGINEERS, INC. FROM SEPTEMBER 8 TO SEPTEMBER 10, 1976.
- 15- CONTOURS INDICATE THICKNESS OF RUBBISH FILL. CONTOUR INTERVAL 5 FEET.
- - - APPROXIMATE EXTENT OF RUBBISH FILL.

**NOTE:**

THE RUBBISH FILL THICKNESS CONTOURS SHOWN HAVE BEEN INTERPOLATED BASED ON AVAILABLE SUBSURFACE DATA. FOR INFORMATION AT SPECIFIC LOCATIONS SEE THE INDIVIDUAL LOGS OF TEST BORING OR TEST PIT.

EXIST. FOUNDATION  
4' 5" BASEMENT

HAGGERTY ROAD

10 MILE ROAD

**RUBBISH FILL THICKNESS**

PROPOSED DEALERSHIP FACILITIES  
TEN MILE AND HAGGERTY ROAD  
FARMINGTON HILLS, MICHIGAN

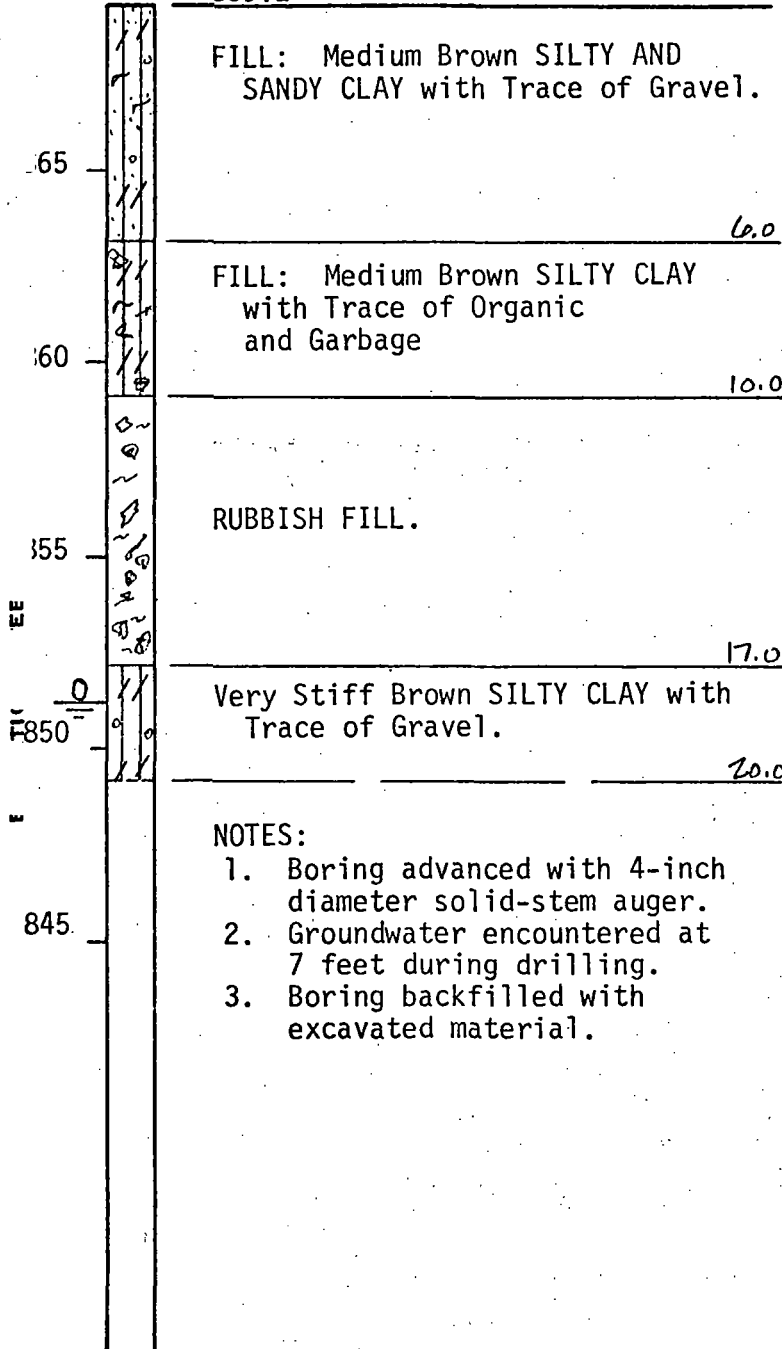
**NH** NEYER, TISEO & HINDO, LTD.  
CONSULTING ENGINEERS  
30999 TEN MILE RD., FARMINGTON HILLS, MI 48024

PROJECT NO.: 56724 DRAWN BY: MFG DATE: 1.24.84  
SCALE: AS SHOWN CHECKED BY: JCN SHEET 1 OF 1



|  |
|--|
| <b>LOG OF SUBSURFACE PROFILE</b>                         |
| <b>CLASSIFICATIONS BY:</b><br>NEYER, TISEO & HINDO, LTD. |
| <b>GROUND SURFACE ELEVATION:</b><br>869.2                |

| SOIL SAMPLE DATA |              |                                    |                   |                          |    |    |    |    |    |
|------------------|--------------|------------------------------------|-------------------|--------------------------|----|----|----|----|----|
| SAMPLE NUMBER    | ELEV. (FEET) | NATURAL MOISTURE CONTENT (PERCENT) | DRY DENSITY (PCF) | PENETRATION RESISTANCE * |    |    |    |    |    |
|                  |              |                                    |                   | 0                        | 10 | 20 | 30 | 40 | 50 |
| LS-1             | 849.2        | 17.8                               | 114.0             | 21-18-19                 |    |    |    |    |    |
|                  |              |                                    |                   |                          |    |    |    |    |    |



**TOTAL DEPTH:** 20.0'  
**BORING STARTED:** 12-5-83  
**BORING COMPLETED:** 12-5-83  
**INSPECTOR:** K. Deddeh  
**DRILLER:** Bob Lemke  
**CONTRACTOR:** Corbin Drilling Co.  
**WATER LEVEL** IN HOLE AT INDICATED  
**NUMBER OF HOURS AFTER COMPLETION OF BORING**  
**WITH** 0 **FEET OF CASING IN PLACE.**  
**\* PENETRATION RESISTANCE:**  
**NUMBER OF BLOWS REQUIRED TO DRIVE** 2 **INCH**  
**O.D. SOIL SAMPLER** 12 **INCHES, USING** 140  
 30 **FEET FALL**

**NEYER, TISEO & HINDO, LTD.**  
CONSULTING ENGINEERS

**LOG OF TEST BORING NUMBER** 1

PROPOSED DEALERSHIP FACILITIES  
 TEN MILE & HAGGERTY ROAD  
 FARMINGTON HILLS, MICHIGAN

**APPROVED BY:** [Signature]  
**DATE:** 12-16-83  
**PROJECT NO.** 56924  
**FIGURE NO.** 1

**LOG OF SUBSURFACE PROFILE**CLASSIFICATIONS BY:  
NEYER, TISEO & HINDO, LTD.

GROUND SURFACE ELEVATION:

869.0

FILL: Medium Brown SANDY AND SILTY  
CLAY with Trace of Gravel and  
Organic Matter.

7.0

Hard Brown SILTY CLAY with Traces of  
Sand and Gravel.

10.0

## NOTES:

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Boring dry at completion.
3. Boring backfilled with excavated material.

**SOIL SAMPLE DATA**

| SAMPLE<br>NUMBER           | ELEV.<br>(FEET) | NATURAL<br>MOISTURE<br>CONTENT<br>(PERCENT) | DRY<br>DENSITY<br>(PCF) | PENETRATION<br>RESISTANCE * |    |    |    |    |    |   |
|----------------------------|-----------------|---|-------------------------|-----------------------------|----|----|----|----|----|---|
|                            |                 |   |                         | 0                           | 10 | 20 | 30 | 40 | 50 |   |
| VISUAL CLASSIFICATION ONLY |                 |   |                         |                             |    |    |    |    |    |   |
| LS-1                       | 859.0           | 15.2  | 115.5                   | 15                          | 25 | 30 |    |    |    | → |
|                            |                 |   |                         |                             |    |    |    |    |    |   |

TOTAL DEPTH: 10.0'  
BORING STARTED: 12-5-83  
BORING COMPLETED: 12-5-83  
INSPECTOR: K. Deddeh  
DRILLER: Bob Lemke  
CONTRACTOR: Corbin Drilling Co.

WATER LEVEL IN HOLE AT INDICATED  
NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.

\* PENETRATION RESISTANCE:  
NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

**NEYER, TISEO & HINDO, LTD.**  
CONSULTING ENGINEERS

LOG OF TEST BORING NUMBER 2

PROPOSED DEALERSHIP FACILITIES  
TEN MILE & HAGGERTY ROAD  
FARMINGTON HILLS, MICHIGAN

APPROVED BY: *JMS* DATE: 12-16-83  
PROJECT No. 56924 FIGURE No. 2

**LOG OF SUBSURFACE PROFILE**

CLASSIFICATIONS BY:

NEYER, TISEO &amp; HINDO, LTD.

GROUND SURFACE ELEVATION:

869.1

FILL: Medium Brown SILTY AND SANDY  
CLAY with Trace of Gravel.

3.0

Very Stiff Brown SANDY AND SILTY  
CLAY.

4.6

Compact Brown FINE CLAYEY SAND  
with Trace of Gravel.

5.0

## NOTES:

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Boring dry at completion.
3. Boring backfilled with excavated material.

**SOIL SAMPLE DATA**SAMPLE  
NUMBERELEV.  
(FEET)NATURAL  
MOISTURE  
CONTENT  
(PERCENT)DRY  
DENSITY  
(PCF)PENETRATION  
RESISTANCE \*

0 10 20 30 40 50

VISUAL CLASSIFICATION ONLY

LS-1

864.1

16.7

114.3

13-17-14

TOTAL DEPTH:

5.0'

BORING STARTED:

12-5-83

BORING COMPLETED:

12-5-83

INSPECTOR:

K. Deddeh

DRILLER:

Bob Lemke

CONTRACTOR:

Corbin Drilling Co.

WATER LEVEL IN HOLE AT INDICATED

NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.

## \* PENETRATION RESISTANCE:

NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH

O.D. SOIL SAMPLER 12 INCHES, USING 140

POUND WEIGHT WITH 30 INCH FREE FALL.

**NEYER, TISEO & HINDO, LTD.**  
CONSULTING ENGINEERS

LOG OF TEST BORING NUMBER 4

PROPOSED DEALERSHIP FACILITIES  
TEN MILE & HAGGERTY ROAD  
FARMINGTON HILLS, MICHIGANAPPROVED BY: *JMS*

DATE: 12-16-83

PROJECT No. 56924

FIGURE No. 3



|   |
|---|
| <b>LOG OF SUBSURFACE PROFILE</b>                                    |
| <b>CLASSIFICATIONS BY:</b><br><b>NEYER, TISEO &amp; HINDO, LTD.</b> |
| <b>GROUND SURFACE ELEVATION:</b>                                    |

874.2  
 870 --- FILL: Medium Brown SILTY CLAY with  
 Traces of Gravel and Sand. 2.0  
 865 --- FILL: Medium Brown SILTY CLAY with  
 Traces of Organic Matter, Gravel  
 and Sand. 6.0  
 --- Very Stiff Brown SILTY CLAY with  
 Traces of Gravel and Sand. 8.0

**NOTES:**

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Boring dry at completion.
3. Boring backfilled with excavated material.

| SOIL SAMPLE DATA           |              |                                    |                   |                          |    |    |    |    |    |
|----------------------------|--------------|------------------------------------|-------------------|--------------------------|----|----|----|----|----|
| SAMPLE NUMBER              | ELEV. (FEET) | NATURAL MOISTURE CONTENT (PERCENT) | DRY DENSITY (PCF) | PENETRATION RESISTANCE * |    |    |    |    |    |
|                            |              |                                    |                   | 0                        | 10 | 20 | 30 | 40 | 50 |
| VISUAL CLASSIFICATION ONLY |              |                                    |                   |                          |    |    |    |    |    |
| LS-1                       | 866.2        | 13.8                               | 122.0             | 24                       | 17 | 25 |    |    |    |

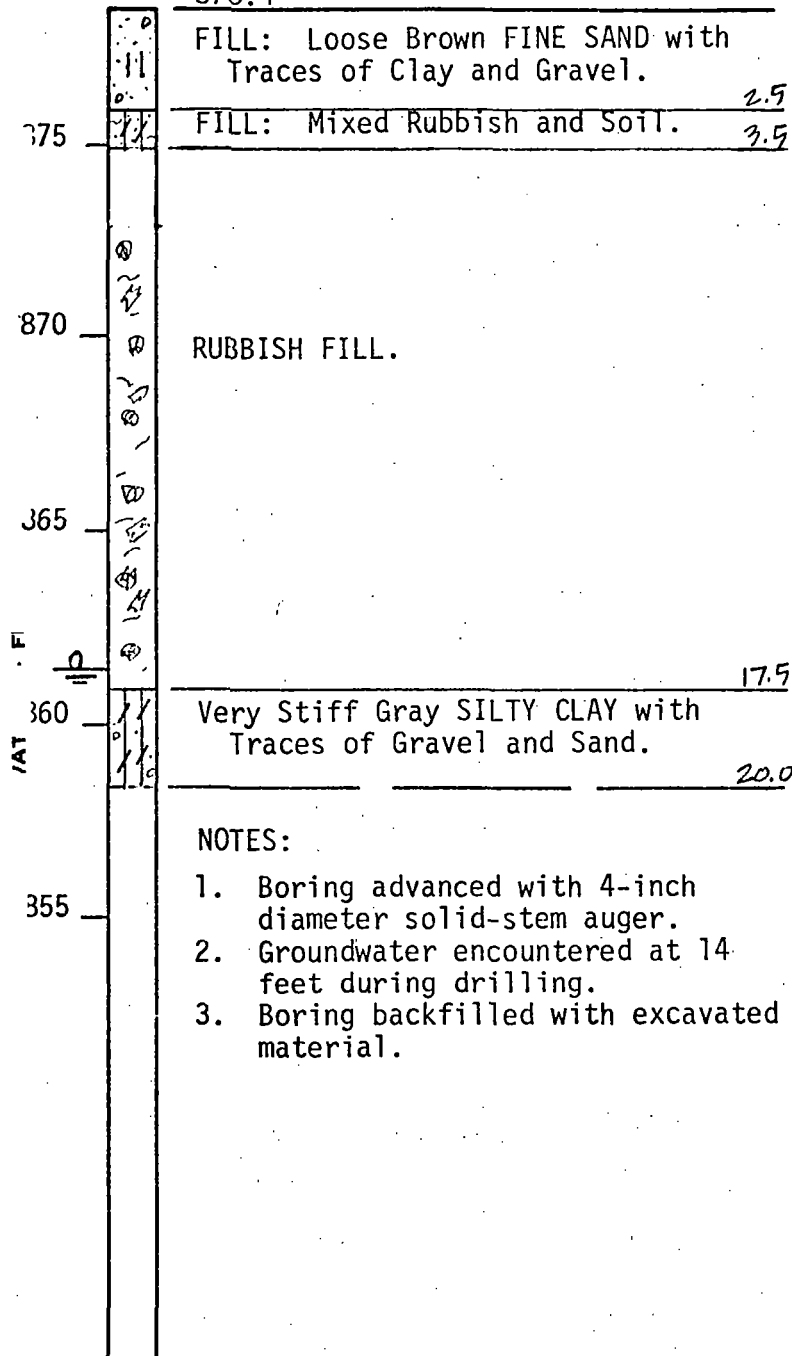
**TOTAL DEPTH:** 8.0'  
**BORING STARTED:** 12-5-83  
**BORING COMPLETED:** 12-5-83  
**INSPECTOR:** K. Deddeh  
**DRILLER:** Bob Lemke  
**CONTRACTOR:** Corbin Drilling Co.  
**WATER LEVEL** IN HOLE AT INDICATED  
 NUMBER OF HOURS AFTER COMPLETION OF BORING  
 WITH 0 FEET OF CASING IN PLACE.  
**\* PENETRATION RESISTANCE:**  
 NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
 O.D. SOIL SAMPLER 12 INCHES, USING 140  
 POUND WEIGHT WITH 30 INCH FREE FALL.

|  |                |
|--|----------------|
| <b>NEYER, TISEO &amp; HINDO, LTD.</b>  |                |
| CONSULTING ENGINEERS   |                |
| LOG OF TEST BORING NUMBER <u>6</u>   |                |
| PROPOSED DEALERSHIP FACILITIES<br>TEN MILE & HAGGERTY ROAD<br>FARMINGTON HILLS, MICHIGAN |                |
| APPROVED BY: <i>QMS</i>  | DATE: 12-16-83 |
| PROJECT No. 56924  | FIGURE No. 4   |

15-21-26

FIGURE NO. 5

|  |
|--|
| <b>LOG OF SUBSURFACE PROFILE</b>                         |
| <b>CLASSIFICATIONS BY:</b><br>NEYER, TISEO & HINDO, LTD. |
| <b>GROUND SURFACE ELEVATION:</b><br>878.4                |



| SOIL SAMPLE DATA           |              |                                    |                   |                          |    |    |    |    |    |
|----------------------------|--------------|------------------------------------|-------------------|--------------------------|----|----|----|----|----|
| SAMPLE NUMBER              | ELEV. (FEET) | NATURAL MOISTURE CONTENT (PERCENT) | DRY DENSITY (PCF) | PENETRATION RESISTANCE * |    |    |    |    |    |
|                            |              |                                    |                   | 0                        | 10 | 20 | 30 | 40 | 50 |
| VISUAL CLASSIFICATION ONLY |              |                                    |                   |                          |    |    |    |    |    |
| LS-1                       | 858.4        | 14.9                               | 119.8             | 13                       | 14 | 15 |    |    |    |

**TOTAL DEPTH:** 20.0'

**BORING STARTED:** 12-5-83

**BORING COMPLETED:** 12-5-83

**INSPECTOR:** K. Deddeh

**DRILLER:** Bob Lemke

**CONTRACTOR:** Corbin Drilling Co.

**WATER LEVEL** IN HOLE AT INDICATED  
NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.

**\* PENETRATION RESISTANCE:**  
NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

|  |                |
|--|----------------|
| <b>NEYER, TISEO &amp; HINDO, LTD.</b><br>CONSULTING ENGINEERS                            |                |
| LOG OF TEST BORING NUMBER <u>8</u>   |                |
| PROPOSED DEALERSHIP FACILITIES<br>TEN MILE & HAGGERTY ROAD<br>FARMINGTON HILLS, MICHIGAN |                |
| APPROVED BY: <i>JMS</i>  | DATE: 12-16-83 |
| PROJECT NO. 56924  | FIGURE NO. 6   |

**LOG OF SUBSURFACE PROFILE**

CLASSIFICATIONS BY:

NEYER, TISEO &amp; HINDO, LTD.

GROUND SURFACE ELEVATION:

876.8

875

FILL: Medium Brown SANDY AND  
SILTY CLAY.

2.0

870

RUBBISH FILL.

865

860

855

Medium Gray SILTY CLAY with Traces  
of Gravel and Sand.

19.0

22.0

Very Stiff Gray SILTY CLAY with  
Traces of Gravel and Sand.

25.0

850

## NOTES:

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Groundwater encountered at 15 feet during drilling.
3. Boring backfilled with excavated material.

**SOIL SAMPLE DATA**SAMPLE  
NUMBERELEV.  
(FEET)NATURAL  
MOISTURE  
CONTENT  
(PERCENT)DRY  
DENSITY  
(PCF)PENETRATION  
RESISTANCE \*

0 10 20 30 40 50

VISUAL CLASSIFICATION ONLY

LS-1

851.8

13.9

124.2

18-13-17

TOTAL DEPTH: 25.0'  
BORING STARTED: 12-5-83  
BORING COMPLETED: 12-5-83  
INSPECTOR: K. Deddeh  
DRILLER: Bob Lemke  
CONTRACTOR: Corbin Drilling Co.  
WATER LEVEL IN HOLE AT INDICATED  
NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.  
\* PENETRATION RESISTANCE:  
NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

**NEYER, TISEO & HINDO, LTD.**

CONSULTING ENGINEERS

LOG OF TEST BORING NUMBER 9

PROPOSED DEALERSHIP FACILITIES  
TEN MILE & HAGGERTY ROAD  
FARMINGTON HILLS, MICHIGAN

APPROVED BY: JMS

DATE: 12-16-83

PROJECT NO. 56924

FIGURE NO. 7

| LOG OF SUBSURFACE PROFILE  |  | SOIL SAMPLE DATA  |                 |   |                         |                            |  |  |  |  |  |
|--|--|---|-----------------|---|-------------------------|----------------------------|--|--|--|--|--|
| CLASSIFICATIONS BY:<br>NEYER, TISEO & HINDO, LTD.  |  | SAMPLE<br>NUMBER  | ELEV.<br>(FEET) | NATURAL<br>MOISTURE<br>CONTENT<br>(PERCENT) | DRY<br>DENSITY<br>(PCF) | PENETRATION*<br>RESISTANCE |  |  |  |  |  |
| GROUND SURFACE ELEVATION:<br>875.3   |  |   |                 |   |                         |                            |  |  |  |  |  |
| 875  |  | FILL: Medium Brown SILTY CLAY with Traces of Sand and Gravel. |                 |   |                         |                            |  |  |  |  |  |
| 870  |  |   |                 |   |                         |                            |  |  |  |  |  |
| 865  |  |   |                 |   |                         |                            |  |  |  |  |  |
| 860  | RUBBISH FILL.  |   |                 |   |                         |                            |  |  |  |  |  |
| 855  |  | VISUAL CLASSIFICATION ONLY                                    |                 |   |                         |                            |  |  |  |  |  |
| 850  |  |   |                 |   |                         |                            |  |  |  |  |  |
| 845  |  |   |                 |   |                         |                            |  |  |  |  |  |
| 840  | 37.0<br>Stiff Gray SILTY CLAY with Traces of Gravel.           | S-1   | 840.3           | 10.1  | -                       |                            |  |  |  |  |  |
| 835  | 38.0<br>Stiff Brown SILTY CLAY with Traces of Gravel and Sand. | LS-1  | 837.3           | 18.4  | 114.4                   | 9-8-8                      |  |  |  |  |  |
| NOTES:<br>1. Boring advanced with 4-inch diameter solid-stem auger.<br>2. Groundwater encountered at 22 feet during drilling.<br>3. Boring backfilled with excavated material. |  |   |                 |   |                         |                            |  |  |  |  |  |

TOTAL DEPTH: 38.0'  
 BORING STARTED: 12-5-83  
 BORING COMPLETED: 12-5-83  
 INSPECTOR: K. Deddeh  
 DRILLER: Bob Lemke  
 CONTRACTOR: Corbin Drilling Co.  
 = WATER LEVEL IN HOLE AT INDICATED  
 NUMBER OF HOURS AFTER COMPLETION OF BORING  
 WITH 0 FEET OF CASING IN PLACE.  
 \*PENETRATION RESISTANCE:  
 NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
 O.D. SOIL SAMPLER 12 INCHES, USING 140  
 POUND WEIGHT WITH 30 INCH FREE FALL.

| NEYER, TISEO & HINDO, LTD.   |                |
|--|----------------|
| CONSULTING ENGINEERS   |                |
| LOG OF TEST BORING NUMBER <u>10</u>  |                |
| PROPOSED DEALERSHIP FACILITIES<br>TEN MILE & HAGGERTY ROAD<br>FARMINGTON HILLS, MICHIGAN |                |
| APPROVED BY: <i>JMB</i>  | DATE: 12-16-83 |
| PROJECT No. 56924  | FIGURE No. 8   |

# LOG OF SUBSURFACE PROFILE

CLASSIFICATIONS BY:  
 NEYER, TISEO & HINDO, LTD.

GROUND SURFACE ELEVATION:  
 875.6

875- FILL: Medium Brown SILTY CLAY with Trace of Gravel.  
 870- FILL: Medium to Stiff Brown SILTY CLAY with Traces of Gravel and Sand.  
 865- FILL: Medium to Stiff Brown SILTY CLAY with Trace of Organic Matter.  
 Very Stiff Brown SILTY CLAY with Traces of Gravel and Sand.

- NOTES:
1. Boring advanced with 4-inch diameter solid-stem auger.
  2. Boring dry at completion.
  3. Boring backfilled with excavated material.

| SOIL SAMPLE DATA |              |                                    |                   |                          |    |    |    |    |    |
|------------------|--------------|------------------------------------|-------------------|--------------------------|----|----|----|----|----|
| SAMPLE NUMBER    | ELEV. (FEET) | NATURAL MOISTURE CONTENT (PERCENT) | DRY DENSITY (PCF) | PENETRATION RESISTANCE * |    |    |    |    |    |
|                  |              |                                    |                   | 0                        | 10 | 20 | 30 | 40 | 50 |
| LS-1             | 870.6        | 17.1                               | 112.7             | 4                        | 6  | 8  |    |    |    |
| LS-2             | 865.6        | 16.8                               | 118.0             | 7                        | 10 | 13 |    |    |    |

TOTAL DEPTH: 10.0'  
 BORING STARTED: 12-2-83  
 BORING COMPLETED: 12-2-83  
 INSPECTOR: K. Deddeh  
 DRILLER: Bob Lemke  
 CONTRACTOR: Corbin Drilling Co.

WATER LEVEL IN HOLE AT INDICATED  
 NUMBER OF HOURS AFTER COMPLETION OF BORING  
 WITH 0 FEET OF CASING IN PLACE.  
 \* PENETRATION RESISTANCE:  
 NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
 O.D. SOIL SAMPLER 12 INCHES, USING 140  
 POUND WEIGHT WITH 30 INCH FREE FALL.

NEYER, TISEO & HINDO, LTD.  
 CONSULTING ENGINEERS

LOG OF TEST BORING NUMBER 11

PROPOSED DEALERSHIP FACILITIES  
 TEN MILE & HAGGERTY ROAD  
 FARMINGTON HILLS, MICHIGAN

APPROVED BY: *JMS*

DATE: 12-16-83

PROJECT No. 56924

FIGURE No. 9



**LOG OF SUBSURFACE PROFILE**CLASSIFICATIONS BY:  
**NEYER, TISEO & HINDO, LTD.**

GROUND SURFACE ELEVATION:

880.4

880 - FILL: Medium Brown SILTY CLAY with  
Trace of Organic Matter. 2.9

875 - RUBBISH FILL.

870 - Medium Dark Brown SANDY AND SILTY  
CLAY with Trace of Organic Matter. 10.0Medium Compact Grayish Brown  
SILT. 14.0865 - Very Compact Brown FINE SAND  
with Trace of Gravel, Silt  
and Clay. 15.0**NOTES:**

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Groundwater encountered at 14 feet during drilling.
3. Boring backfilled with excavated material.

**SOIL SAMPLE DATA**

| SAMPLE<br>NUMBER           | ELEV.<br>(FEET) | NATURAL<br>MOISTURE<br>CONTENT<br>(PERCENT) | DRY<br>DENSITY<br>(PCF) | PENETRATION<br>RESISTANCE * |    |    |    |    |    |  |
|----------------------------|-----------------|---|-------------------------|-----------------------------|----|----|----|----|----|--|
|                            |                 |   |                         | 0                           | 10 | 20 | 30 | 40 | 50 |  |
| VISUAL CLASSIFICATION ONLY |                 |   |                         |                             |    |    |    |    |    |  |
| LS-1                       | 865.4           | 11.0  | 132.3                   | 30                          | 41 | 42 |    |    |    |  |
|                            |                 |   |                         |                             |    |    |    |    |    |  |

TOTAL DEPTH: 15.0'  
BORING STARTED: 12-2-83  
BORING COMPLETED: 12-2-83  
INSPECTOR: K. Deddeh  
DRILLER: Bob Lemke  
CONTRACTOR: Corbin Drilling Co.

WATER LEVEL IN HOLE AT INDICATED  
NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.

**\* PENETRATION RESISTANCE:**

NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

**NEYER, TISEO & HINDO, LTD.**  
CONSULTING ENGINEERS

LOG OF TEST BORING NUMBER 12

PROPOSED DEALERSHIP FACILITIES  
TEN MILE & HAGGERTY ROAD  
FARMINGTON HILLS, MICHIGAN

APPROVED BY: *[Signature]*

DATE: 12-16-83

PROJECT NO. 56924

FIGURE NO. 10

|   |
|---|
| <b>LOG OF SUBSURFACE PROFILE</b>                                    |
| <b>CLASSIFICATIONS BY:</b><br><b>NEYER, TISEO &amp; HINDO, LTD.</b> |
| <b>GROUND SURFACE ELEVATION:</b>                                    |

881.5

880

FILL: Medium Brown SILTY AND SANDY CLAY with Traces of Gravel and Organic Matter.

2.0

875

RUBBISH FILL.

870

865

FILL: Medium Brown SILTY CLAY with Trace of Organic Matter.

14.0

16.0

Stiff Brown SILTY CLAY with Traces of Clay.

860

Very Stiff Gray SILTY CLAY with Traces of Gravel and Sand.

19.0

20.0

**NOTES:**

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Boring dry at completion.
3. Boring backfilled with excavated material.

| SOIL SAMPLE DATA           |              |                                    |                   |                          |    |    |    |    |    |
|----------------------------|--------------|------------------------------------|-------------------|--------------------------|----|----|----|----|----|
| SAMPLE NUMBER              | ELEV. (FEET) | NATURAL MOISTURE CONTENT (PERCENT) | DRY DENSITY (PCF) | PENETRATION RESISTANCE * |    |    |    |    |    |
|                            |              |                                    |                   | 0                        | 10 | 20 | 30 | 40 | 50 |
| VISUAL CLASSIFICATION ONLY |              |                                    |                   |                          |    |    |    |    |    |
| LS-1                       | 861.5        | 13.6                               | 122.5             | 11                       | 22 | 22 |    |    |    |

**TOTAL DEPTH:** 20.0'  
**BORING STARTED:** 12-1-83  
**BORING COMPLETED:** 12-1-83  
**INSPECTOR:** K. Deddeh  
**DRILLER:** Bob Lemke  
**CONTRACTOR:** Corbin Drilling Co.

**WATER LEVEL** IN HOLE AT INDICATED  
 NUMBER OF HOURS AFTER COMPLETION OF BORING  
 WITH 0 FEET OF CASING IN PLACE.

\* **PENETRATION RESISTANCE:**  
 NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
 O.D. SOIL SAMPLER 12 INCHES, USING 140  
30

**NEYER, TISEO & HINDO, LTD.**  
 CONSULTING ENGINEERS

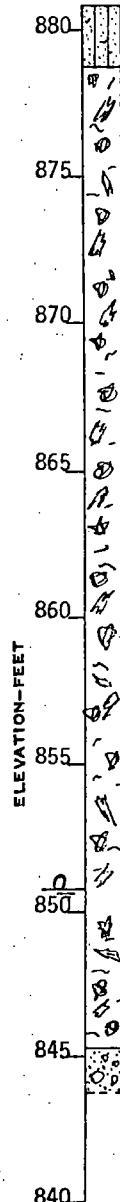
**LOG OF TEST BORING NUMBER** 13

PROPOSED DEALERSHIP FACILITIES  
 TEN MILE & HAGGERTY ROAD  
 FARMINGTON HILLS, MICHIGAN

**APPROVED BY:** QMS **DATE:** 12-16-83  
**PROJECT No.** 56924 **FIGURE No.** 11



| LOG OF SUBSURFACE PROFILE                         |  |
|---|--|
| CLASSIFICATIONS BY:<br>NEYER, TISEO & HINDO, LTD. |  |
| GROUND SURFACE ELEVATION:<br>880.8                |  |



FILL: Medium Brown SANDY CLAY with  
Traces of Organic Matter. 2.0

RUBBISH FILL.

Compact Brown MEDIUM TO COARSE SAND  
with Traces of Gravel and Stones. 35.0

NOTES:

1. Boring advanced with 6-inch diameter hollow-stem augers.
2. Groundwater encountered at 36 feet during drilling.
3. Boring backfilled with excavated material.

| SOIL SAMPLE DATA           |                 |   |                         |                             |    |    |    |    |    |  |
|----------------------------|-----------------|---|-------------------------|-----------------------------|----|----|----|----|----|--|
| SAMPLE<br>NUMBER           | ELEV.<br>(FEET) | NATURAL<br>MOISTURE<br>CONTENT<br>(PERCENT) | DRY<br>DENSITY<br>(PCF) | PENETRATION *<br>RESISTANCE |    |    |    |    |    |  |
|                            |                 |   |                         | 0                           | 10 | 20 | 30 | 40 | 50 |  |
| VISUAL CLASSIFICATION ONLY |                 |   |                         |                             |    |    |    |    |    |  |
| LS-1                       | 859.7           | -   | -                       | 4-5-7                       |    |    |    |    |    |  |
| S-1                        | 843.8           | 7.4   | -                       | 6-15-20                     |    |    |    |    |    |  |
|                            |                 |   |                         |                             |    |    |    |    |    |  |

TOTAL DEPTH: 37.0'

BORING STARTED: 12-2-83

BORING COMPLETED: 12-2-83

INSPECTOR: K. Deddeh

DRILLER: Bob Lemke

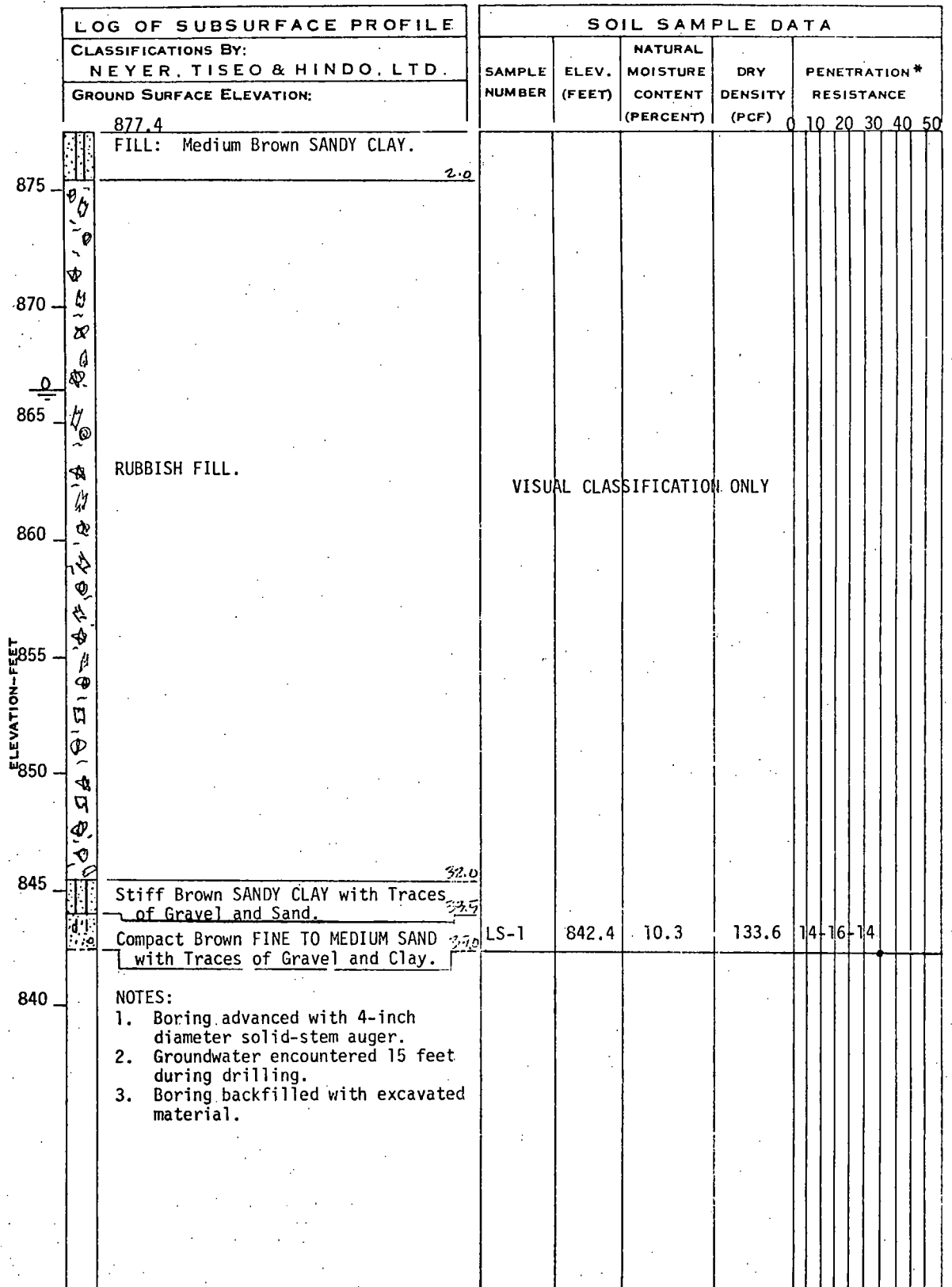
CONTRACTOR: Corbin Drilling Co.

WATER LEVEL IN HOLE AT INDICATED  
NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.

\*PENETRATION RESISTANCE:  
NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

| NEYER, TISEO & HINDO, LTD.   |                |
|--|----------------|
| CONSULTING ENGINEERS   |                |
| LOG OF TEST BORING NUMBER 15   |                |
| PROPOSED DEALERSHIP FACILITIES<br>TEN MILE & HAGGERTY ROAD<br>FARMINGTON HILLS, MICHIGAN |                |
| APPROVED BY: <i>[Signature]</i>  | DATE: 12-16-83 |
| PROJECT No. 56924  | FIGURE No. 13  |

## FIGURE NO. 14



TOTAL DEPTH: 35.0'  
 BORING STARTED: 12-1-83  
 BORING COMPLETED: 12-1-83  
 INSPECTOR: K. Deddeh  
 DRILLER: Bob Lemke  
 CONTRACTOR: Corbin Drilling Co.

WATER LEVEL IN HOLE AT INDICATED  
 NUMBER OF HOURS AFTER COMPLETION OF BORING  
 WITH 0 FEET OF CASING IN PLACE.  
 \*PENETRATION RESISTANCE:  
 NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
 O.D. SOIL SAMPLER 12 INCHES, USING 140  
 POUND WEIGHT WITH 30 INCH FREE FALL.

|  |                |
|--|----------------|
| <b>NEYER, TISEO &amp; HINDO, LTD.</b>  |                |
| CONSULTING ENGINEERS   |                |
| LOG OF TEST BORING NUMBER 17   |                |
| PROPOSED DEALERSHIP FACILITIES<br>TEN MILE & HAGGERTY ROAD<br>FARMINGTON HILLS, MICHIGAN |                |
| APPROVED BY: <i>[Signature]</i>  | DATE: 12-16-83 |
| PROJECT No. 56924  | FIGURE No. 15  |



CLASSIFICATIONS BY:  
NEYER, TISEO & HINDO, LTD.  
GROUND SURFACE ELEVATION:

FILL: Medium Brown SANDY AND SILTY CLAY.

845

ELEVATION- FEET

2.0

| SAMPLE<br>NUMBER | ELEV.<br>(FEET) | NATURAL<br>MOISTURE<br>CONTENT<br>(PERCENT) | DRY<br>DENSITY<br>(PCF) | PENETRATION*<br>RESISTANCE |
|------------------|-----------------|---|-------------------------|----------------------------|
|------------------|-----------------|---|-------------------------|----------------------------|

0 10 20 30 40 50

VISUAL CLASSIFICATION ONLY

|     |       |   |   |        |
|-----|-------|---|---|--------|
| S-1 | 849.7 | - | - | 6-9-17 |
|-----|-------|---|---|--------|

|      |       |     |       |          |
|------|-------|-----|-------|----------|
| LS-1 | 846.7 | 7.4 | 122.1 | 20-24-27 |
|------|-------|-----|-------|----------|

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Boring dry at completion.
3. Boring backfilled with excavated material.

**TOTAL DEPTH:** 36.0'  
**BORING STARTED:** 12-1-83  
**BORING COMPLETED:** 12-1-83  
**INSPECTOR:** K. Deddeh  
**DRILLER:** Bob Lemke  
**CONTRACTOR:** Corbin Drilling Co.

WATER LEVEL IN HOLE AT INDICATED  
NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.

**\*PENETRATION RESISTANCE:**

NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

**NEYER, TISEO & HINDO, LTD.**  
CONSULTING ENGINEERS

LOG OF TEST BORING NUMBER 18

PROPOSED DEALERSHIP FACILITIES  
TEN MILE & HAGGERTY ROAD  
FARMINGTON HILLS, MICHIGAN

|                                 |                |
|---------------------------------|----------------|
| APPROVED BY: <i>[Signature]</i> | DATE: 12-16-83 |
|---------------------------------|----------------|

|             |       |            |    |
|-------------|-------|------------|----|
| PROJECT NO. | 56924 | FIGURE NO. | 16 |
|-------------|-------|------------|----|

| LOG OF SUBSURFACE PROFILE  |   | SOIL SAMPLE DATA |                 |   |                         |                                |    |    |  |  |  |
|--|---|------------------|-----------------|---|-------------------------|--------------------------------|----|----|--|--|--|
| CLASSIFICATIONS BY:<br>NEYER, TISEO & HINDO, LTD.  |   | SAMPLE<br>NUMBER | ELEV.<br>(FEET) | NATURAL<br>MOISTURE<br>CONTENT<br>(PERCENT) | DRY<br>DENSITY<br>(PCF) | PENETRATION*                   |    |    |  |  |  |
| GROUND SURFACE ELEVATION:<br>886.0   |   |                  |                 |   |                         | RESISTANCE<br>0 10 20 30 40 50 |    |    |  |  |  |
| 885  | FILL: Medium Brown SANDY SILTY CLAY<br>with Traces of Organic Matter. 1.5           |                  |                 |   |                         |                                |    |    |  |  |  |
| 880  |   |                  |                 |   |                         |                                |    |    |  |  |  |
| 875  |   |                  |                 |   |                         |                                |    |    |  |  |  |
| 870  | RUBBISH FILL.   |                  |                 |   |                         |                                |    |    |  |  |  |
| 865  |   |                  |                 |   |                         |                                |    |    |  |  |  |
| 860  |   |                  |                 |   |                         |                                |    |    |  |  |  |
| 855  | Very Stiff Brown SANDY CLAY with<br>Traces of Gravel, Sand and Silt. 20.0           |                  |                 |   |                         |                                |    |    |  |  |  |
| 850  | Very Compact Brown MEDIUM TO<br>COARSE SAND with Traces of Gravel<br>and Clay. 33.0 | LS-1             | 853.0           | 5.1   | 124.3                   | 29                             | 50 | 45 |  |  |  |
| NOTES:<br>1. Boring advanced with 4-inch<br>diameter solid-stem auger.<br>2. Boring dry at completion.<br>3. Boring backfilled with excavated<br>material. |   |                  |                 |   |                         |                                |    |    |  |  |  |

**TOTAL DEPTH:** 33.0'

**BORING STARTED:** 12-1-83

**BORING COMPLETED:** 12-1-83

**INSPECTOR:** K. Deddeh

**DRILLER:** Bob Lemke

**CONTRACTOR:** Corbin Drilling Co.

**WATER LEVEL** IN HOLE AT INDICATED

NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.

\***PENETRATION RESISTANCE:**

NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

**NEYER, TISEO & HINDO, LTD.**  
CONSULTING ENGINEERS

LOG OF TEST BORING NUMBER 19

PROPOSED DEALERSHIP FACILITIES  
TEN MILE & HAGGERTY ROAD  
FARMINGTON HILLS, MICHIGAN

|                                 |                |
|---------------------------------|----------------|
| APPROVED BY: <i>[Signature]</i> | DATE: 12-16-83 |
| PROJECT No. 56924               | FIGURE No. 17  |

## FIGURE NO. 18

# ATI

CLASSIFICATIONS BY:  
NEYER, TISEO & HINDO, LTD.

GROUND SURFACE ELEVATION:

FILL: Medium Brown SANDY AND SILTY CLAY with Traces of Gravel.

3.0

860

855

850

845

840

835

830

RUBBISH FILL.

|  |     |
|--|-----|
| Very Compact Gray SAND with Trace of Gravel. | 38. |
|--|-----|

| SAMPLE<br>NUMBER | ELEV.<br>(FEET) | NATURAL                          | DRY | PENETRATION *    |            |    |    |    |    |
|------------------|-----------------|----------------------------------|-----|------------------|------------|----|----|----|----|
|                  |                 | MOISTURE<br>CONTENT<br>(PERCENT) |     | DENSITY<br>(PCF) | RESISTANCE |    |    |    |    |
|                  |                 |                                  |     | 0                | 10         | 20 | 30 | 40 | 50 |

VISUAL CLASSIFICATION ONLY

|     |       |   |   |          |
|-----|-------|---|---|----------|
| S-1 | 843.9 | - | - | 11-11-12 |
|-----|-------|---|---|----------|

|      |       |      |       |         |
|------|-------|------|-------|---------|
| LS-1 | 834.4 | 13.1 | 127.2 | 8-22-31 |
|------|-------|------|-------|---------|

**NOTES:**

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Groundwater encountered at 25 feet during drilling.
3. Boring backfilled with excavated material.

**TOTAL DEPTH:** 38.0'  
**BORING STARTED:** 11-30-83  
**BORING COMPLETED:** 11-30-83  
**INSPECTOR:** K. Deddeh  
**DRILLER:** Bob Lemke  
**CONTRACTOR:** Corbin Drilling Co.

WATER LEVEL IN HOLE AT INDICATED  
NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.

**\*PENETRATION RESISTANCE:**  
NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

**NEYER, TISEO & HINDO, LTD.**  
CONSULTING ENGINEERS

LOG OF TEST BORING NUMBER 21

PROPOSED DEALERSHIP FACILITIES  
TEN MILE & HAGGERTY ROAD  
FARMINGTON HILLS, MICHIGAN

|                         |                |
|-------------------------|----------------|
| APPROVED BY: <i>JMS</i> | DATE: 12-16-83 |
| PROJECT NO. 56924       | FIGURE NO. 19  |

## 835

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Groundwater encountered at 24 feet during drilling.
3. Boring backfilled with excavated material.

NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

## 22-26-27

|            |          |
|------------|----------|
| DATE:      | 12-16-83 |
| FIGURE NO. | 20       |

| LOG OF SUBSURFACE PROFILE   |   | SOIL SAMPLE DATA |                 |   |                         |              |  |  |  |  |  |
|---|---|------------------|-----------------|---|-------------------------|--------------|--|--|--|--|--|
| CLASSIFICATIONS BY:<br>NEYER, TISEO & HINDO, LTD.   |   | SAMPLE<br>NUMBER | ELEV.<br>(FEET) | NATURAL<br>MOISTURE<br>CONTENT<br>(PERCENT) | DRY<br>DENSITY<br>(PCF) | PENETRATION* |  |  |  |  |  |
| GROUND SURFACE ELEVATION:   |   |                  |                 |   |                         | RESISTANCE   |  |  |  |  |  |
| 883.8   |   |                  |                 |   |                         |              |  |  |  |  |  |
| TOPSOIL: Black CLAYEY SILT.<br>Medium Brown CLAY with Traces of<br>Sand and Silt.   |   |                  |                 |   |                         |              |  |  |  |  |  |
| 880   | RUBBISH FILL.                                     |                  |                 |   |                         |              |  |  |  |  |  |
| 875   |   |                  |                 |   |                         |              |  |  |  |  |  |
| 870   |   |                  |                 |   |                         |              |  |  |  |  |  |
| 865   |   |                  |                 |   |                         |              |  |  |  |  |  |
| 860   |   |                  |                 |   |                         |              |  |  |  |  |  |
| 855   | Stiff Brown SILTY AND SANDY CLAY.                 | S-1              | 852.8           | 16.2  | 118.2                   | PUSHED       |  |  |  |  |  |
| 850   | Compact Gray MEDIUM SAND with<br>Trace of Gravel. | LS-1             | 850.8           | 8.1   | 129.0                   | 8-21-24      |  |  |  |  |  |
| NOTES:<br>1. Boring advanced with 4-inch<br>diameter solid-stem auger.<br>2. Groundwater encountered at 15<br>feet during drilling.<br>3. Boring backfilled with excavated<br>material. |   |                  |                 |   |                         |              |  |  |  |  |  |

TOTAL DEPTH: 33.0'  
 BORING STARTED: 11-30-83  
 BORING COMPLETED: 11-30-83  
 INSPECTOR: K. Deddeh  
 DRILLER: Bob Lemke  
 CONTRACTOR: Corbin Drilling Co.  
 WATER LEVEL IN HOLE AT INDICATED  
 NUMBER OF HOURS AFTER COMPLETION OF BORING  
 WITH 0 FEET OF CASING IN PLACE.  
 \*PENETRATION RESISTANCE:  
 NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
 O.D. SOIL SAMPLER 12 INCHES, USING 140  
 POUND WEIGHT WITH 30 INCH FREE FALL.

|  |                |
|--|----------------|
| <b>NEYER, TISEO &amp; HINDO, LTD.</b>  |                |
| CONSULTING ENGINEERS   |                |
| LOG OF TEST BORING NUMBER 23   |                |
| PROPOSED DEALERSHIP FACILITIES<br>TEN MILE & HAGGERTY ROAD<br>FARMINGTON HILLS, MICHIGAN |                |
| APPROVED BY: <i>[Signature]</i>  | DATE: 12-16-83 |
| PROJECT No. 56924  | FIGURE No. 21  |

**LOG OF SUBSURFACE PROFILE**

CLASSIFICATIONS BY:

NEYER, TISEO &amp; HINDO, LTD.

GROUND SURFACE ELEVATION:

887.8

TOPSOIL: Dark Brown SILTY CLAY  
with Trace of Organic Matter.FILL: Medium Brown SANDY AND  
SILTY CLAY.Stiff Brown SILTY CLAY with Traces of  
Gravel and Sand.Very Stiff Brown SILTY CLAY with  
Traces of Gravel and Sand.

## NOTES:

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Boring dry at completion.
3. Boring backfilled with excavated material.

**SOIL SAMPLE DATA**SAMPLE  
NUMBERELEV.  
(FEET)NATURAL  
MOISTURE  
CONTENT  
(PERCENT)DRY  
DENSITY  
(PCF)PENETRATION  
RESISTANCE \*

0 10 20 30 40 50

VISUAL CLASSIFICATION ONLY

LS-1

877.8

12.9

126.9

12-16-18

TOTAL DEPTH:

10.0'

BORING STARTED:

12-1-83

BORING COMPLETED:

12-1-83

INSPECTOR:

K. Deddeh

DRILLER:

Bob Lemke

CONTRACTOR:

Corbin Drilling Co.

WATER LEVEL IN HOLE AT INDICATED

NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.

## \* PENETRATION RESISTANCE:

NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.**NEYER, TISEO & HINDO, LTD.**

CONSULTING ENGINEERS

LOG OF TEST BORING NUMBER 24

PROPOSED DEALERSHIP FACILITIES

TEN MILE &amp; HAGGERTY ROAD

FARMINGTON HILLS, MICHIGAN

APPROVED BY: *DMB*

DATE: 12-16-83

PROJECT NO.

56924

FIGURE NO.

22

|  |
|--|
| <p><b>CLASSIFICATIONS BY:</b><br/> <b>NEYER, TISEO &amp; HINDO, LTD.</b></p> |
| <p><b>GROUND SURFACE ELEVATION:</b><br/>         888.0</p>                   |

FILL: Medium Dark Brown SANDY AND SILTY CLAY with Traces of Organic Matter. 2.0

Stiff to Very Stiff Brown SILTY CLAY  
with Traces of Gravel and Sand. 50

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Boring dry at completion.
3. Boring backfilled with excavated material.

TOTAL DEPTH: 5.0'  
BORING STARTED: 12-1-83  
BORING COMPLETED: 12-1-83  
INSPECTOR: K. Deddeh  
DRILLER: Bob Lemke  
CONTRACTOR: Corbin Drilling Co.  
WATER LEVEL IN HOLE AT INDICATED  
NUMBER OF HOURS AFTER COMPLETION OF BORING  
WITH 0 FEET OF CASING IN PLACE.  
\* PENETRATION RESISTANCE:  
NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

[illegible]

|                                 |                |
|---------------------------------|----------------|
| APPROVED BY: <i>[Signature]</i> | DATE: 12-16-83 |
| PROJECT NO. 56924               | FIGURE NO. 23  |



NOTES:

1. Boring advanced with 4-inch diameter solid-stem auger.
2. Groundwater encountered at 26 feet during drilling.
3. Boring backfilled with excavated material.
4. Obstruction encountered at 5 feet boring offset.

\_\_\_\_\_

**\*PENETRATION RESISTANCE:**  
NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
O.D. SOIL SAMPLER 12 INCHES, USING 140  
POUND WEIGHT WITH 30 INCH FREE FALL.

|  |                |
|--|----------------|
| <b>NEYER, TISEO &amp; HINDO, LTD.</b><br>CONSULTING ENGINEERS                            |                |
| LOG OF TEST BORING NUMBER <u>26</u>  |                |
| PROPOSED DEALERSHIP FACILITIES<br>TEN MILE & HAGGERTY ROAD<br>FARMINGTON HILLS, MICHIGAN |                |
| APPROVED BY: <i>DWIS</i>   | DATE: 12-16-83 |
| PROJECT No. 56924  | FIGURE No. 24  |

|                   |               |
|-------------------|---------------|
| PROJECT No. 56924 | FIGURE No. 25 |
|-------------------|---------------|

FIGURE NO. 26

| LOG OF SUBSURFACE PROFILE  |   | SOIL SAMPLE DATA |                 |   |                         |              |    |    |    |    |    |
|--|---|------------------|-----------------|---|-------------------------|--------------|----|----|----|----|----|
| CLASSIFICATIONS BY:<br>NEYER, TISEO & HINDO, LTD.  |   | SAMPLE<br>NUMBER | ELEV.<br>(FEET) | NATURAL<br>MOISTURE<br>CONTENT<br>(PERCENT) | DRY<br>DENSITY<br>(PCF) | PENETRATION* |    |    |    |    |    |
| GROUND SURFACE ELEVATION:  |   |                  |                 |   |                         | RESISTANCE   |    |    |    |    |    |
| 880.2  |   |                  |                 |   |                         | 0            | 10 | 20 | 30 | 40 | 50 |
| 880  | FILL: Medium Brown SILTY CLAY with Little Sand and Pieces of Wood, Brick, Metal and Miscellaneous Debris. |                  |                 |   |                         |              |    |    |    |    |    |
| 875  | RUBBISH FILL.   |                  |                 |   |                         |              |    |    |    |    |    |
| 870  | FILL: Mixed Soil and Rubbish.   | S-1              | 868.2           | 24.8  | 101.7                   | 6            | 5  | 3  |    |    |    |
| 865  | FILL: Medium Black SILTY CLAY with Some Rubbish.  | S-               | 863.2           | No Recovery                                 |                         | 6            | 5  | 3  |    |    |    |
| 860  |   | S-2              | 860.2           | 70.0  | -                       | 5            | 5  | 3  |    |    |    |
| 855  |   | S-3              | 856.2           | 71.7  | -                       | 22           | 13 | 6  | 17 |    |    |
| 850  | Compact Brown MEDIUM SAND AND GRAVEL.   | LS-1             | 850.2           | 5.4   | -                       | 7            | 8  | 11 |    |    |    |
| NOTES:<br>1. Boring advanced with 6-inch diameter hollow-stem auger.<br>2. Obstruction encountered at 4 and 5 depth hole relocated twice.<br>3. Groundwater encountered at 12 feet during drilling.<br>4. Boring backfilled with excavated material. |   |                  |                 |   |                         |              |    |    |    |    |    |

TOTAL DEPTH: 30.0'  
 BORING STARTED: 11-29-83  
 BORING COMPLETED: 11-29-83  
 INSPECTOR: K. Deddeh  
 DRILLER: Bob Lemke  
 CONTRACTOR: Corbin Drilling Co.

WATER LEVEL IN HOLE AT INDICATED  
 NUMBER OF HOURS AFTER COMPLETION OF BORING  
 WITH 0 FEET OF CASING IN PLACE.

\*PENETRATION RESISTANCE:  
 NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
 O.D. SOIL SAMPLER 12 INCHES, USING 140  
 POUND WEIGHT WITH 30 INCH FREE FALL.

|  |                |
|--|----------------|
| <b>NEYER, TISEO &amp; HINDO, LTD.</b>  |                |
| CONSULTING ENGINEERS   |                |
| LOG OF TEST BORING NUMBER 29   |                |
| PROPOSED DEALERSHIP FACILITIES<br>TEN MILE & HAGGERTY ROAD<br>FARMINGTON HILLS, MICHIGAN |                |
| APPROVED BY: <i>[Signature]</i>  | DATE: 12-16-83 |
| PROJECT NO. 56924  | FIGURE NO. 27  |

**LOG OF SUBSURFACE PROFILE**

CLASSIFICATIONS BY:  
**NEYER, TISEO & HINDO, LTD.**

GROUND SURFACE ELEVATION:

878.7

FILL: Medium Brown SILTY CLAY  
 with Little Sand, Brick, Glass,  
 Metal and Debris.

875

FILL: Mixed Soil and Rubbish.

870

FILL: Soft to Medium Brown SANDY  
 CLAY with Pieces of Metal and Glass

865

Medium Brown SILTY AND SANDY CLAY  
 with Trace of Gravel.

**NOTES:**

1. Boring advanced with 6-inch diameter hollow-stem auger.
2. Boring dry at completion.
3. Boring backfilled with excavated material.

860

FEET  
 1  
 11  
 1

TOTAL DEPTH: 15.0'  
 BORING STARTED: 11-29-83  
 BORING COMPLETED: 11-29-83  
 INSPECTOR: K. Deddeh  
 DRILLER: Bob Lemke  
 CONTRACTOR: Corbin Drilling Co.

**WATER LEVEL** IN HOLE AT INDICATED  
 NUMBER OF HOURS AFTER COMPLETION OF BORING  
 WITH 0 FEET OF CASING IN PLACE.

\* **PENETRATION RESISTANCE:**  
 NUMBER OF BLOWS REQUIRED TO DRIVE 2 INCH  
 O.D. SOIL SAMPLER 12 INCHES, USING 140  
30 FREE FALL.

**SOIL SAMPLE DATA**

| SAMPLE NUMBER              | ELEV. (FEET) | NATURAL MOISTURE CONTENT (PERCENT) | DRY DENSITY (PCF) | PENETRATION RESISTANCE * |   |    |    |    |    |    |  |  |  |  |
|----------------------------|--------------|------------------------------------|-------------------|--------------------------|---|----|----|----|----|----|--|--|--|--|
|                            |              |                                    |                   |                          | 0 | 10 | 20 | 30 | 40 | 50 |  |  |  |  |
| VISUAL CLASSIFICATION ONLY |              |                                    |                   |                          |   |    |    |    |    |    |  |  |  |  |
| S-1                        | 863.0        | 18.5                               | -                 | 3-5-3                    |   |    |    |    |    |    |  |  |  |  |

**NEYER, TISEO & HINDO, LTD.**  
 CONSULTING ENGINEERS

LOG OF TEST BORING NUMBER 30

PROPOSED DEALERSHIP FACILITIES  
 TEN MILE & HAGGERTY ROAD  
 FARMINGTON HILLS, MICHIGAN

APPROVED BY: [Signature] DATE: 12-16-83  
 PROJECT NO. 56924 FIGURE NO. 28

PROJECT NO. 56924

NEYER, TISEO &amp; HINDO, LTD.

SHEET 1 OF 3

## TABULATION OF TEST DATA

| TEST BORING OR<br>TEST PIT NUMBER | SAMPLE NUMBER | DEPTH OF SAMPLE TIP | ELEVATION OF SAMPLE TIP | UNCONFINED COMPRESSIVE<br>STRENGTH (PSF) | FAILURE STRAIN (PERCENT) | NATURAL WATER CONTENT<br>(PERCENT OF DRY WEIGHT) | IN-PLACE DRY DENSITY<br>(POUNDS PER CUBIC FOOT) | VOLUMETRIC<br>ANALYSIS |                   |               | PARTICLE SIZE DISTRIBUTION |                |                |                     |                       |                       |                  | ATTERBERG<br>LIMITS       |                            |                               | APPARENT SPECIFIC GRAVITY |
|-----------------------------------|---------------|---------------------|-------------------------|--|--------------------------|--|---|------------------------|-------------------|---------------|----------------------------|----------------|----------------|---------------------|-----------------------|-----------------------|------------------|---------------------------|----------------------------|-------------------------------|---------------------------|
|                                   |               |                     |                         |  |                          |  |   | SOLIDS (PERCENT)       | LIQUIDS (PERCENT) | AIR (PERCENT) | COLLOIDS (PERCENT)         | CLAY (PERCENT) | SILT (PERCENT) | FINE SAND (PERCENT) | MEDIUM SAND (PERCENT) | COARSE SAND (PERCENT) | GRAVEL (PERCENT) | LIQUID LIMIT<br>(PERCENT) | PLASTIC LIMIT<br>(PERCENT) | PLASTICITY INDEX<br>(PERCENT) |                           |
| 1                                 | LS-1          | 20.0                | 849.2                   | 2650                                     | 20.0                     | 17.8   | 114.0   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 2                                 | LS-1          | 10.0                | 859.0                   | 11880                                    | 18.2                     | 15.2   | 115.5   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 4                                 | LS-1          | 5.0                 | 864.1                   | 3900                                     | 9.1                      | 16.7   | 114.3   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 6                                 | LS-1          | 8.0                 | 866.2                   | 24700                                    | 9.1                      | 13.8   | 122.0   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 7                                 | LS-1          | 17.0                | 865.6                   | 5270                                     | 20.0                     | 14.1   | 117.9   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 8                                 | LS-1          | 20.0                | 858.4                   | 9330                                     | 20.0                     | 14.9   | 119.8   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 9                                 | LS-1          | 25.0                | 851.8                   | 9360                                     | 20.0                     | 13.9   | 124.2   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 10                                | S-1           | 35.0                | 840.3                   | -  | -                        | 10.1   | -   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 10                                | LS-1          | 38.0                | 837.3                   | 1080                                     | 17.3                     | 18.4   | 114.4   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 11                                | LS-1          | 5.0                 | 870.6                   | 2800                                     | 11.8                     | 17.1   | 112.7   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 11                                | LS-2          | 10.0                | 865.6                   | 8570                                     | 20.0                     | 16.8   | 118.0   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 12                                | LS-1          | 15.0                | 865.4                   | 510                                      | 1.8                      | 11.0   | 132.3   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 13                                | LS-1          | 20.0                | 861.5                   | 6290                                     | 20.0                     | 13.6   | 122.5   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |

TABULATION OF TEST DATA

| TEST BORING OR<br>TEST PIT NUMBER | SAMPLE NUMBER | DEPTH OF SAMPLE TIP | ELEVATION OF SAMPLE TIP | UNCONFINED COMPRESSIVE<br>STRENGTH (PSF) | FAILURE STRAIN (PERCENT) | NATURAL WATER CONTENT<br>(PERCENT OF DRY WEIGHT) | IN-PLACE DRY DENSITY<br>(POUNDS PER CUBIC FOOT) | VOLUMETRIC<br>ANALYSIS |                   |               | PARTICLE SIZE DISTRIBUTION |                |                |                     |                       |                       |                  | ATTERBERG<br>LIMITS       |                            |                               | APPARENT SPECIFIC GRAVITY |
|-----------------------------------|---------------|---------------------|-------------------------|--|--------------------------|--|---|------------------------|-------------------|---------------|----------------------------|----------------|----------------|---------------------|-----------------------|-----------------------|------------------|---------------------------|----------------------------|-------------------------------|---------------------------|
|                                   |               |                     |                         |  |                          |  |   | SOLIDS (PERCENT)       | LIQUIDS (PERCENT) | AIR (PERCENT) | COLLOIDS (PERCENT)         | CLAY (PERCENT) | SILT (PERCENT) | FINE SAND (PERCENT) | MEDIUM SAND (PERCENT) | COARSE SAND (PERCENT) | GRAVEL (PERCENT) | LIQUID LIMIT<br>(PERCENT) | PLASTIC LIMIT<br>(PERCENT) | PLASTICITY INDEX<br>(PERCENT) |                           |
| 14                                | LS-1          | 35.0                | 846.4                   | 690                                      | 4.2                      | 11.7   | 127.6   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 15                                | S-1           | 37.0                | 843.8                   | -  | -                        | 7.4  | -   |                        |                   |               | ←                          | 9              | →              | 7                   | 16                    | 14                    | 54               |                           |                            |                               |                           |
| 16                                | LS-1          | 10.0                | 865.5                   | 20480                                    | 18.2                     | 14.6   | 120.5   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 17                                | LS-1          | 35.0                | 842.4                   | -  | -                        | 10.3   | 133.6   |                        |                   |               | ←                          | 19             | →              | 14                  | 33                    | 24                    | 10               |                           |                            |                               |                           |
| 18                                | LS-1          | 36.0                | 846.7                   | -  | -                        | 7.4  | 122.1   |                        |                   |               | ←                          | 20             | →              | 8                   | 16                    | 21                    | 35               |                           |                            |                               |                           |
| 19                                | LS-1          | 33.0                | 853.0                   | -  | -                        | 5.1  | 124.3   |                        |                   |               | ←                          | 19             | →              | 15                  | 25                    | 23                    | 18               |                           |                            |                               |                           |
| 20                                | LS-1          | 5.0                 | 883.7                   | 10070                                    | 10.9                     | 15.9   | 118.0   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 21                                | LS-1          | 38.0                | 834.4                   | -  | -                        | 13.1   | 127.2   |                        |                   |               | ←                          | 6              | →              | 15                  | 61                    | 8                     | 10               |                           |                            |                               |                           |
| 22                                | LS-1          | 40.0                | 839.9                   | -  | -                        | 15.5   | 117.8   |                        |                   |               | ←                          | 10             | →              | 47                  | 40                    | 2                     | 1                |                           |                            |                               |                           |
| 23                                | S-1           | 31.0                | 852.8                   | 7640                                     | 8.2                      | 16.2   | 118.2   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 23                                | LS-1          | 33.0                | 850.8                   | -  | -                        | 8.1  | 129.0   |                        |                   |               | ←                          | 19             | →              | 9                   | 23                    | 19                    | 30               |                           |                            |                               |                           |
| 24                                | LS-1          | 10.0                | 877.8                   | 17230                                    | 11.8                     | 12.9   | 126.9   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 25                                | LS-1          | 5.0                 | 883.8                   | 14990                                    | 9.1                      | 12.4   | 124.9   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |

| PROJECT NO. 56924                 |               | NEYER, TISEO & HINDO, LTD. |                         |  |                          |  |   |                        |                   |               |                            | SHEET 3        |                | OF 3                |                       |                       |                  |                           |                            |                               |                           |
|-----------------------------------|---------------|----------------------------|-------------------------|--|--------------------------|--|---|------------------------|-------------------|---------------|----------------------------|----------------|----------------|---------------------|-----------------------|-----------------------|------------------|---------------------------|----------------------------|-------------------------------|---------------------------|
| TABULATION OF TEST DATA           |               |                            |                         |  |                          |  |   |                        |                   |               |                            |                |                |                     |                       |                       |                  |                           |                            |                               |                           |
| TEST BORING OR<br>TEST PIT NUMBER | SAMPLE NUMBER | DEPTH OF SAMPLE TIP        | ELEVATION OF SAMPLE TIP | UNCONFINED COMPRESSIVE<br>STRENGTH (PSF) | FAILURE STRAIN (PERCENT) | NATURAL WATER CONTENT<br>(PERCENT OF DRY WEIGHT) | IN-PLACE DRY DENSITY<br>(POUNDS PER CUBIC FOOT) | VOLUMETRIC<br>ANALYSIS |                   |               | PARTICLE SIZE DISTRIBUTION |                |                |                     |                       |                       |                  | ATTERBERG<br>LIMITS       |                            |                               | APPARENT SPECIFIC GRAVITY |
|                                   |               |                            |                         |  |                          |  |   | SOLIDS (PERCENT)       | LIQUIDS (PERCENT) | AIR (PERCENT) | COLLOIDS (PERCENT)         | CLAY (PERCENT) | SILT (PERCENT) | FINE SAND (PERCENT) | MEDIUM SAND (PERCENT) | COARSE SAND (PERCENT) | GRAVEL (PERCENT) | LIQUID LIMIT<br>(PERCENT) | PLASTIC LIMIT<br>(PERCENT) | PLASTICITY INDEX<br>(PERCENT) |                           |
| 26                                | LS-1          | 30.0                       | 843.7                   | -  | -                        | 14.8   | 121.7   |                        |                   |               | ↗                          | 14             | ↘              | 62                  | 15                    | 5                     | 4                |                           |                            |                               |                           |
| 27                                | S-1           | 36.5                       | 842.7                   | -  | -                        | 10.6   | -   |                        |                   |               | ↗                          | 27             | ↘              | 18                  | 17                    | 13                    | 25               |                           |                            |                               |                           |
| 28                                | S-1           | 25.0                       | 856.4                   | -  | -                        | 44.2   | -   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 28                                | S-2A          | 28.0                       | 853.2                   | -  | -                        | 16.7   | -   |                        |                   |               | ↗                          | 53             | ↘              | 22                  | 8                     | 7                     | 10               |                           |                            |                               |                           |
| 28                                | S-2B          | 28.0                       | 853.2                   | -  | -                        | 14.7   | -   |                        |                   |               | ↗                          | 35             | ↘              | 10                  | 10                    | 5                     | 40               |                           |                            |                               |                           |
| 29                                | S-1           | 12.0                       | 868.2                   | 160                                      | 4.2                      | 24.8   | 101.7   |                        |                   |               | ↗                          | 11             | ↘              | 10                  | 29                    | 23                    | 27               |                           |                            |                               |                           |
| 29                                | S-2           | 20.0                       | 860.2                   | -  | -                        | 70.0   | -   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 29                                | S-3           | 24.0                       | 856.2                   | -  | -                        | 71.7   | -   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 29                                | LS-1          | 30.0                       | 850.2                   | -  | -                        | 5.4  | -   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |
| 30                                | S-1           | 15.0                       | 863.0                   | -  | -                        | 18.5   | -   |                        |                   |               | -                          | -              | -              | -                   | -                     | -                     | -                |                           |                            |                               |                           |